LAURA GEYEN
WATER QUALITY INTERN

“This internship allowed me to gain experience in the environmental science field that I am most passionate about: water quality. I was able to build strong professional relationships and build my knowledge of water quality and management.”

- LAURA

RMB Environmental Labs
Dear Reader:

The Alliance for Science & Technology Research in America estimates that by 2026, Minnesota will be home to nearly 450,000 high-wage, high tech jobs. Workforce development in the science, technology, engineering and mathematics (STEM) fields is crucial to help fill these positions and improve the economic outlook for employers and families across the state.

Meanwhile, Minnesota is faced with a STEM workforce conundrum: Students need experience to get a job, but need a job to get experience, and small companies across the state are struggling to find ways to connect to bright, emerging, talented students that can help their businesses grow. This challenge is complicated by Minnesota's net "brain drain" — the flow of STEM talent leaving the state. Internships help students bridge the gap from classroom to career while providing employers with opportunities to build their talent pipeline.

The SciTechsperience Internship Program was launched in 2012 to address Minnesota’s STEM workforce challenge. SciTechsperience connects college students in STEM fields with paid internships at small to mid-sized companies across the state. Each participating business receives a dollar-for-dollar match from the Department of Employment and Economic Development to help cover 50 percent of the intern’s wages. The match is capped at $2,500. Interns participate in hands-on learning, solving real-world business challenges — the kind of experience that helps students launch their professional STEM careers. SciTechsperience facilitates connections between students and employers, with employers maintaining hiring decisions.

Hundreds of small Minnesota businesses have hired nearly 900 interns through SciTechsperience since the program began. The Minnesota High Tech Association (MHTA) serves as the steward of the program. As part of our grant funding, MHTA submits an annual report to the Department of Employment and Economic Development summarizing the internship program’s outcomes for the preceding program year. Our 2017 report includes information about, among other areas, student and business applicants, intern placements and return on investment.

Workforce development and retention of talent, which are both objectives of the SciTechsperience Internship Program, play a crucial role in helping develop and grow top talent right here in Minnesota. To help meet demand for the SciTechsperience Internship Program, the Minnesota State Legislature appropriated $2 million in grant funding to fund 450 STEM internships over the 2016-17 biennium. On average, for every $1.00 of matching grants invested by the State of Minnesota, businesses participating in the SciTechsperience Internship Program paid $2.66 in wages to participating interns — that’s a great return on investment for our state.

Moving forward we hope to continue to build on the success of the SciTechsperience Internship Program by providing more STEM students with meaningful internship experiences to prepare them for today’s competitive workforce.

Thank you for your support,

Margaret Anderson Kelliher  
President & CEO  
Minnesota High Tech Association

Becky Siekmeier  
Program Director  
Minnesota High Tech Association

Margaret Anderson Kelliher  
Becky Siekmeier
“The financial support and pool of applicants from SciTechsperience helped make our summer program a reality. Our interns had amazing experiences, and we got to spend time teaching our craft and challenging ourselves to do better.”

– Jeff Lin, CEO, Bust Out Solutions, Minneapolis

“Taneeya Rele, Bust Out Solutions, Minneapolis

“The quality of communication with me from SciTechsperience staff was exceptional and the site visit was great. I loved every part of the internship.”

– Taneeya Rele, Bust Out Solutions, Minneapolis

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In the 2015 legislative session, the Legislature invested $2 million in the SciTechsperience Internship Program for the fiscal 2016-2017 biennium. This report outlines the results of the 2017 program year.

By 2026, Minnesota is expected to have nearly 450,000 high-wage, high tech jobs – an increase of 10 percent over 2016. Workforce development in the science, technology, engineering and mathematics (STEM) fields is crucial to helping fill these positions. With average hourly earnings of $27.53-$45.37 in STEM occupations vs. an average of $16.21-$35.16 in non-STEM fields, STEM workforce development can dramatically improve the economic outlook for companies and families across the state. The Minnesota High Tech Association (MHTA) and the Department of Employment and Economic Development’s (DEED) SciTechsperience Internship Program was created in 2012 to prepare and retain talented college students for careers here in Minnesota.

In 2017, nearly 1500 students and 242 small companies applied to the SciTechsperience Internship Program. SciTechsperience connected 293 students to paid internships across the state – exceeding the placement goal of 250 by 17 percent. Companies in 64 cities hosted internships, with 32 percent of these internships taking place in Greater Minnesota.

SciTechsperience made great strides in increasing the diversity of the student pool in 2017. Fifty three percent of applicants (779 of 1,479) were either male students of color or female (all ethnicities), compared to 45 percent in 2016. Forty-three percent of 2017 hires (127 of 293) were male students of color or female (all ethnicities), an 11 point jump from 2016 (32 percent, 74 of 230).

SciTechsperience targets seven core industries (see page 7 for a full list). In 2017, the IT/Computer Technology sector had the largest share of hires with 30 percent – a jump of 7 percentage points over 2016. Manufacturing was second with 23 percent, followed by Biotechnology/Life Sciences and Engineering Services (18 percent each). See page 9 for additional results.

SciTechsperience is a successful public/private partnership with a positive return on investment: For every $1.00 invested by the state in matching grants, $2.66 was paid in wages to interns by small and growing private Minnesota companies.

Workforce development and retention of talent, which are both goals of the SciTechsperience Internship Program, play a crucial role in helping develop and grow top talent right here in Minnesota. To help meet the continued demand for the SciTechsperience Internship Program, the Minnesota State Legislature invested appropriated $2.7 million in grant funding to fund 650 STEM internships over the 2018-19 biennium – a 45 percent increase in the number of internships funded over the 2016-2017 biennium.
SciTechsperience connects college students studying STEM disciplines with paid internship opportunities in small, for-profit companies in Minnesota. Qualified hiring companies receive a dollar-for-dollar matching stipend for 50 percent of the intern’s wages. The match is capped at $2,500.

According to the US Department of Commerce’s Economics and Statistics Administration’s report titled STEM Jobs: 2017 Update, STEM jobs will continue to outpace non-STEM jobs in growth, wages (average hourly earnings: STEM $27.53-$45.37 vs. non-STEM $16.21-$35.16), and demand through 2026. Minnesota is projected to have 446,251 STEM jobs by 2026, a growth of 10% over 2016 (405,506). With the retirement of thousands of baby boomers and the net ‘brain drain’ of young talent leaving the state, it is in Minnesota’s long term interest to both build and retain its STEM workforce.

“Although still relatively small in number, the STEM workforce has an outsized impact on a nation’s competitiveness, economic growth, and overall standard of living. STEM workers drive innovation (as measured by patents), and they have the flexible skills needed for the modern economy. At a time when firms across the economy cite difficulty matching skilled workers to job openings, the ability of STEM workers to adapt to new circumstances and processes makes them highly sought after. For workers, STEM jobs are linked to lower unemployment and higher wages, regardless of educational background or other factors. Strengthening the workforce training pipeline into STEM jobs can provide benefits to both businesses and workers.” – STEM Jobs: 2017 Update

STEM workforce development is crucial to helping fill the demand for STEM positions while improving the financial outlook for Minnesota families and companies. MHTA and the Department of Employment and Economic Development’s SciTechsperience Internship Program aims to prepare and retain talented college students to become productive members of Minnesota’s STEM workforce.

2017 student eligibility criteria:
- A Minnesota resident or attending college in Minnesota, and 18 years of age or older;
- In good academic standing (2.50+ GPA);
- A technical or community college student (halfway through their program) or a college junior or senior (60 credits completed);
- Enrolled in an accredited U.S. college and pursuing a qualifying science, technology, engineering or math degree;
- Eligible to work off campus in the U.S.

2017 company eligibility criteria:
- For-profit companies with a physical presence in Minnesota;
- Small to mid-sized (based on the number of full-time equivalent employees worldwide); companies located in the seven county metro area must have 150 employees or fewer worldwide; companies located in Greater Minnesota must have 250 employees or fewer worldwide;
- Offering an internship that provides hands-on industry experience in the following industries: Aerospace, Defense, Agriculture, Food Science, Biotechnology & Life Sciences, Engineering Services, Fuels, Energy, IT/Computer Technology, and Mining, Materials, Manufacturing and Processing.

“At Sambatek, I worked alongside incredible people everyday who enabled me to increase my knowledge day in and day out. I learned how to proficiently use AutoCAD, got experience in the field, worked with private utilities, water mains, tree trenches and man holes. I was able to broaden my horizon within the many fields civil engineering has to offer. This opportunity has helped me decide my career path and has taught me life long skills in a matter of three months that I could not be given in as great of depth within my entire college experience. I am truly grateful.”

– Ashley Astor, Sambatek, Minnetonka
NUMBER OF STUDENT APPLICANTS:
The number of STEM students seeking a paid internship experience remained high compared to 2016: In 2017, 1,479 students applied to SciTechsperience, a 28 percent increase over 2016 (1,153). (See Figure 1).

APPLICANTS BASED ON RESIDENCE
(Based on student’s permanent address; see Figure 2):
The distribution of applicants shifted slightly from 2016. The greatest increases were in applicants from the suburbs (2% increase) and Minneapolis/St. Paul (3% increase), while applicants from Greater Minnesota and Out of State residents dropped 4 percent and 1 percent, respectively. The distribution of applicants in 2017 was:

- Suburbs (7-county metro): 600 (40%)
- Greater Minnesota (GrMN): 413 (28%)
- Minneapolis/St. Paul (MSP): 294 (20%)
- Out of State residents who attend college in MN (OOS): 172 (12%)

APPLICANTS BY COLLEGE/UNIVERSITY SYSTEM: (See Figure 3).
The distribution of student applicants based on the college and university attended was very similar to 2016. In 2017, the percentage of students from the Minnesota State system remained at 27 percent with 402 applicants. The largest number of applicants in this system came from St. Cloud State University (111), Minnesota State Mankato (79), and Metropolitan State University (47).

The percentage of applicants system-wide from the University of Minnesota declined slightly from 42 percent in 2016 to 40 percent in 2017. Students from the U of M-Twin Cities campus still make up the highest number of applicants in the SciTechsperience pool overall, with 596 applicants.

Minnesota’s private colleges were also well-represented with 20 percent of applicants, a 1 percentage point increase over 2016. St. Olaf had a strong showing with 55 applicants; Augsburg University was second (40), and Macalester College was third (35).

SciTechsperience continues to attract Minnesota residents attending college out of state. In 2017, 166 Minnesotans applied from 49 different colleges across the country. The largest number of applicants were from North Dakota State University (32), followed by Iowa State (29) and the South Dakota School of Mines and Technology (17). Fourteen applicants came from...
2017 COMPANY RECRUITING SUMMARY

NUMBER OF COMPANY APPLICANTS:
SciTechsperience has continued to attract new companies each year, jumping from 230 applicants in 2016 to 242 in 2017 (see Figure 4). The growth in this area mirrors MHTA’s recruiting efforts, which are based on the number of matching wage grants available to help hiring companies cover 50 percent of their intern’s wages (up to $2,500). SciTechsperience provided wage matches for 293 internships in 2017.

The average number of employees at participating companies statewide was 42 (with a median of 22). In the 2017 program year, companies in the seven-county metro area were capped at 150 employees or fewer worldwide. In Greater Minnesota, companies were allowed up to 250 employees worldwide. The average company applicant in Greater Minnesota had 60 employees (with a median of 35) and in the metro the average was 34 employees (with a median of 17).

Participating companies posted an all-time high of 344 jobs on Sci-TechMN.org in 2017. Some jobs had more than one position open; in total there were 459 openings across the 344 jobs. This compares to 277 internships posted and 353 openings in 2016. Not all company applicants post a position; 26 companies (11 percent of applicants) applied to the program in 2017 without posting a position. This was down from 38 companies, or 17 percent, in 2016.

LOCATION OF COMPANY APPLICANTS
2017 saw a shift from 2016 in the distribution of company applicants based on geographic location. Suburban company applicants edged up slightly from 38 percent in 2016 to 39 percent in 2017, and Minneapolis/St. Paul moved from 26 percent to 29 percent (see Figure 5). There were 77 applicants from Greater Minnesota, making up 32 percent of the pool. This was a decrease from 37 percent of applicants in 2016.
MHTA exceeded the program placement goal by 17 percent, placing 293 students in 64 communities across the state.

SciTechsperience attracts many of Minnesota’s best and brightest students: The average GPA of students hired was 3.35.
MHTA exceeded the program placement goal of 250 interns by 17 percent, placing 293 students in 64 communities across the state. By comparison, in 2016, 230 students were placed in 61 communities. Wage stipends were awarded on a first-come, first-hire basis to qualified companies. Although the program runs year round from September 1 to August 31, most internships took place during the summer months.

LOCATION OF INTERNSHIPS:
In addition to the jump in the total number of hires from 2016 to 2017, another exciting outcome was the increased conversion rate of companies that applied to the program and then followed through with hiring a student (see Figure 8). This conversion rate increased across the board, most notably in Greater Minnesota, which saw a 21 percent increase over 2016, and in Minneapolis St. Paul, which saw a 30 percent increase.

HIRES BY INDUSTRY
SciTechsperience targets seven core industries. While there was an increase in hiring across all sectors from 2016 to 2017, IT/Computer Technology has quickly moved into the lead, capturing 30 percent of all program hires in 2017 (87 interns) versus 23 percent in 2016 (61 hires) (see Figure 9). Also notable was the jump in hires in Manufacturing, which logged 67 hires in 2017 compared to 49 in 2016.

Figure 8. Company Summary based on Geographic Location

<table>
<thead>
<tr>
<th>Location of Company Applicants</th>
<th># Company Applicants</th>
<th>% Company Applicants that Hired</th>
<th># Jobs Posted</th>
<th># Students Hired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minneapolis / St. Paul</td>
<td>71</td>
<td>70%</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Suburbs in the seven county metro area</td>
<td>94</td>
<td>67%</td>
<td>136</td>
<td>108</td>
</tr>
<tr>
<td>Greater Minnesota</td>
<td>77</td>
<td>69%</td>
<td>108</td>
<td>95</td>
</tr>
<tr>
<td>Total</td>
<td>242</td>
<td>69%</td>
<td>344</td>
<td>293</td>
</tr>
</tbody>
</table>

Figure 9. Company Summary based on Industry

<table>
<thead>
<tr>
<th>Applicants by Industry</th>
<th># of Applicants</th>
<th>% of Total Applicants</th>
<th># of Hires</th>
<th>% of Total Hires</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT/Computer Technology</td>
<td>74</td>
<td>31%</td>
<td>87</td>
<td>30%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>56</td>
<td>23%</td>
<td>67</td>
<td>23%</td>
</tr>
<tr>
<td>Engineering Services</td>
<td>43</td>
<td>18%</td>
<td>54</td>
<td>18%</td>
</tr>
<tr>
<td>Biotech/Life Science</td>
<td>42</td>
<td>17%</td>
<td>54</td>
<td>18%</td>
</tr>
<tr>
<td>Agriculture, Food Science</td>
<td>11</td>
<td>5%</td>
<td>8</td>
<td>3%</td>
</tr>
<tr>
<td>Fuels, Energy</td>
<td>10</td>
<td>4%</td>
<td>15</td>
<td>5%</td>
</tr>
<tr>
<td>Aerospace &amp; Defense</td>
<td>6</td>
<td>2%</td>
<td>8</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>242</td>
<td>100%</td>
<td>293</td>
<td>100%</td>
</tr>
</tbody>
</table>
ATTRACTING TALENT TO MINNESOTA:
An important aspect of building and retaining Minnesota’s STEM workforce is attracting talent from out of state. SciTechsperience attracted 172 applicants whose permanent residence is outside of Minnesota and attend college here. These students represented 12 percent of the applicant pool. Sixteen of those students found internships through the program, and more than a hundred others were exposed to the wide variety of opportunities to be found in Minnesota. One hundred forty-nine Minnesotans who attend college out of state (10% of applicants) returned home seeking an internship, and 54 of these students (18% of hires) succeeded through SciTechsperience (see Figure 10). Additional placement highlights may be found in the Appendix beginning on page 18.

SciTechsperience is a successful model for public/private partnerships in terms of return on investment (ROI). For every $1.00 of matching wage reimbursements invested by the state, for-profit companies paid $2.66 in wages to students (see Figure 11). Companies paid $1,816,655.38 in wages to students, while the total amount reimbursed to companies by the state was $682,347.35. That’s an ROI of 2.66 to 1.

The minimum hourly wage for SciTechsperience interns is $12.50 per hour. However, the median wage paid in 2017 was $15.00 per hour, an attractive rate for students at the beginning of their journey into industry.

As a group, SciTechsperience interns logged 117,748 hours for small Minnesota companies (see Figure 12). Internships ranged from 10-40 hours per week, with interns working an average of 402 hours per internship.
2017 DEMOGRAPHIC HIGHLIGHTS

GENDER:
SciTechsperience made great strides with regards to gender diversity in its applicants in 2017, seeing increases in both the number (457) and percentage (31%) of women applicants over 2016 (287 applicants, 25%) (see Figure 13). This hopefully is an indication that the STEM pipeline is beginning to change, as the program is generally a reflection of the state’s pipeline.

<table>
<thead>
<tr>
<th>Student Gender</th>
<th># of Applicants</th>
<th>% of Total Applicants</th>
<th># of Hires</th>
<th>% of Total Hires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>458</td>
<td>31%</td>
<td>71</td>
<td>24%</td>
</tr>
<tr>
<td>Men</td>
<td>1017</td>
<td>69%</td>
<td>221</td>
<td>75%</td>
</tr>
<tr>
<td>Neither</td>
<td>4</td>
<td>&lt;1%</td>
<td>1</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Total</td>
<td>1479</td>
<td>100%</td>
<td>293</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 13. Student Demographics Based on Gender

ETHNICITY:
The SciTechsperience applicant pool was more diverse in 2017 compared to 2016: 33 percent of applicants were non-white in 2017 (495) compared to 29 percent of applicants in 2016 (336) (see Figure 14). While 74 percent of students hired were white, this measure was significantly lower than in 2016, where 83 percent of hires were white students.

<table>
<thead>
<tr>
<th>Student Ethnicity</th>
<th># of Applicants</th>
<th>% of Total Applicants</th>
<th># of Hires</th>
<th>% of Total Hires</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian</td>
<td>3</td>
<td>&lt;1%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Asian</td>
<td>275</td>
<td>19%</td>
<td>46</td>
<td>16%</td>
</tr>
<tr>
<td>Black</td>
<td>124</td>
<td>8%</td>
<td>16</td>
<td>5%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>40</td>
<td>3%</td>
<td>3</td>
<td>1%</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>White</td>
<td>984</td>
<td>67%</td>
<td>217</td>
<td>74%</td>
</tr>
<tr>
<td>Multi-ethnic</td>
<td>53</td>
<td>4%</td>
<td>11</td>
<td>4%</td>
</tr>
<tr>
<td>Total</td>
<td>1479</td>
<td>100%</td>
<td>293</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 14. Student Demographics Based on Ethnicity

In April 2017, the National Society of Black Engineers recognized MHTA for its commitment to this student organization’s local NSBE chapter at the U of M - Twin Cities.
PARTICIPANT FEEDBACK: STUDENTS & EMPLOYERS

Zurich Medical, St. Paul

- “This internship provided me the opportunity to use concepts from class in a real-world setting. I am glad to have been able to make a difference at the company and make great professional connections.” – Bjorn Olmanson
- “This internship gave me the hands-on experience and the real life dilemmas and conflicts that we don’t get to endure in the classroom.” – Amanda Bigger
- “During my time at Zurich, I have learned about aspects of the medical device industry that I would not have been exposed to in the classroom. This internship has helped me develop a better idea of the work that I hope to do in the future.” – Kathryn Almquist
- “Zurich Medical has given me an opportunity to learn and practice hands-on engineering on impactful projects this summer. Throughout the internship I got to know some awesome people and I really enjoyed the culture of the company. I plan on continuing at Zurich during the school year and beyond.” – Anmol Jaguste

RMB Environmental Labs, Detroit Lakes

- “This internship taught me biology in a new way. I wasn’t being talked at in a lecture hall, rather I was experiencing it one-on-one out in the “real world.” I learned proper field techniques as well as different skills within the actual lab. My internship at RMB really solidified what I am studying and what I plan to do in the future. It also taught me that there is no such thing as too much sunscreen.” – Katherine Millette
- “During my time at RMB, I gained a lot of valuable knowledge. I learned about how a professional laboratory functions and how it functions in one that is not academic in purpose. I also was able to gain more clarity about my professional goals. I absorbed as much information as I could and would not trade my experience here for anything.” – Nihaar Joshi

e:Solutions One, Minneapolis

- “e:solutions One does ServiceNow consulting, so I learned a lot on how to leverage the platform. I worked with a Developer named Nic Mann who has years of experience working with ServiceNow. We did backend work on applications and I learned more about the development process. I was also able to observe some of his projects and what it is like to take a three month project from start to finish. I feel that the experience here at e:solutions One has been extremely valuable for me.” – Kevin Cunningham
- “During my internship, I learned valuable web development skills in a small team setting. During my time, I got to see a side of Computer Science that you don’t typically get in school: configuring on platforms like ServiceNow, leveraging libraries like Angular and managing production and development instances of projects. The internship complimented my studies and gave valuable insight into the job landscape.” – Noah Boltik

Art Unlimited, Angora

- “What I appreciated most were the many internship opportunities and clear application process. My internship at Art Unlimited has developed my skills with web development and design. With these skills and new connections I hope to find full time employment on the Iron Range.” – Jeremy Smith
- “What I appreciated most was that SciTechsperience had many internship opportunities and a clear application process. I would recommend this program to a friend. Art Unlimited places a lot of value on the lifelong education and personal growth that goes along with staying at the cutting edge.” – Michelle Sun
PARTICIPANT FEEDBACK: STUDENTS & EMPLOYERS

Natural Process Design, Winona
- “SciTechsperience made me see what brilliant students are out there. My interns are really fabulous - so smart and creative. Am I going to be the poster child for SciTech? I could be really. It has helped me so much. What an innovative and useful program this is.” – Carolyn Dry
- “This internship has given me the opportunity to conduct valuable research at a chemical and mechanical level. I made a lot of acquaintances and lifelong connections, and assured myself this is exactly what I want to be doing.” – Nicholas Simondet
- “I learned how to work effectively and more efficiently with others in a team research environment at NPD. Most importantly, I gained valuable insight into the direction of my interests through independent and guided projects.” – Noah Schmelzer

Syntiron, St. Paul
- “Syntiron wants at least one student intern working in our lab, learning new skills and providing their perspective of how the most recent generation of scientists is seeing the world! SciTechsperience makes that easier and more affordable for both Syntiron and our interns.” – Lisa Herron-Olson
- “This internship allowed me to gain valuable research skills in a professional setting. I was able to gain experience that I wouldn’t have been able to obtain through standard biology courses.” – Molly Westfield

Chromatic 3D Materials, Golden Valley
- “My internship at Chromatic 3D Materials has given me valuable work experience, as well as having taught me how to use multiple forms of communication to organize tasks. I’m very thankful for this opportunity to put my classroom skills to practical use.” – Alec Erickson
- “It is great to be able to reach students directly. Students are familiar enough with the program that the database is full of highly qualified candidates. This program helped us demonstrate our product concept. We will use SciTechsperience again.” – Cora Leibig
- “This is one of the most interesting and unique internships I have ever had. As a computer scientist student, it was an exciting internship learning about mechanical engineering, chemical engineering, and also the experience of working in a startup.” – Nguyen Nguyen

Software for Good, Minneapolis
- “SciTechsperience helped us complete a project for a client with limited ability to pay, which helped us serve our greater mission of making software for the good of the community. SciTech’s financial support helps make it possible for our clients to receive professional grade software while the students gain practical experience.” – Eddie Glenn
- “My internship at Software for Good helped me develop valuable coding and communication skills, and I am motivated to continue pursuing a career in software engineering.” – Ayoub Belemlih
- “This internship was a chance to not only explore work in web development but to experience it in an office and with a project that made me feel like my work can have a positive impact on the world. I’m now hoping to pursue a career with a company whose goals mirror that of Software for Good’s, and I’m not sure that this career path would have occurred to me without this internship.” – Kathryn Yetter
MHTA staff conduct site visits throughout the year to meet with interns and employers. These conversations provide a great opportunity to see the program in action and get an in-depth look at the wide variety of products and services developed in small science and technology companies across Minnesota. Below are examples of articles written about 2017 SciTechsperience participants. The full articles are available on the SciTechMN.org blog page.

**PARTICIPANT STORIES**

SciTechsperience interns help develop topical treatment for Osteoarthritis

**INTERNSHIP SPOTLIGHT:**

Packet Power, Minneapolis

Internship provides platform for exploring interests

**INTERNSHIP SPOTLIGHT:**

EnergyPrint, St. Paul

Bust Out Solutions: Non-Traditional Path Leads to Successful Tech Start-Up

A SciTechsperience All Star

SciTechsperience Intern Helps Make Medicine Personal

SciTechsperience Interns Help Nano Company Make a Big Impact

SciTech intern taps lab experience to land brewery internship

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The SciTechsperience website, SciTechMN.org, not only connects employers and students, the program’s blog also provides resources that enable applicants to have the best possible success in finding and participating in an internship. More webinars are planned for the 2018 program year. Here’s a sampling of what was available in 2017:

**Webinars**

- How to Use SciTechsperience Like a Pro
- How to Host a Successful Internship
- Interviewing Interns: How to Find a Great Fit for Both of You
- How to Maximize Your Job Descriptions to Compete for Great Talent

**Articles**

- Be Prepared for the Interview
- Formula for a Winning Resume
- Biggest Mistakes on Resumes
- Phrases to Avoid in an Interview
- Writing Good Intern Job Descriptions
- Sample Job Descriptions
- Making Internships Work: Best Practices
- Employers Guidebook: Developing Successful Internship Programs
Founded in 2011, AirCorps Aviation in Bemidji is working to keep the stories of the Greatest Generation alive in an interesting and exciting way: through the restoration of World War II-era aircraft. The company has already gained extensive experience with more than 20 Warbird variants. Their customers share their passion and excitement — and want to pass it along to the next generation so the stories aren’t forgotten. AirCorps Aviation employees have gone all over the world to assist in the recovery of these aircraft.

“This company is really well known for doing factory authentic restorations down to the color of the rivets that get used and the stampings on the sheet metal and the fabric covering on wiring,” said Sara Zimmerman, Business Coordinator at AirCorps Aviation.

SciTechsperience intern, Nick Bodensteiner (shown above), helped the company improve its documentation and standardize its important processes. Bodensteiner, a junior at the University of North Dakota at the time, was excited about the opportunity — despite not having much experience with airplanes.

“To be honest, I haven’t done much with airplanes at all, but being an engineer, you look for those unique opportunities and unique challenges,” said Bodensteiner. “It’s different from working on some ‘no-name whatever.’ There’s always a different challenge every day.”

In his internship, Bodensteiner is working on tasks important to a young company like AirCorps Aviation: documentation, safety consulting, and building a brand-new inventory system. Nick was excited that his projects will stick around and help the company long after his internship is over.

Unsurprisingly, Zimmerman and the AirCorps Aviation team are impressed and excited by the work.

“It’s huge to have all of our processes in someone’s head written down somewhere where someone else can benefit in the future,” Zimmerman said.

“Our interns started on a Monday and handed me a first draft of an equipment operating manual on Thursday morning—I was flabbergasted.

It’s been very impressive. It goes so far in the minds of our department leaders on the value of interns and hosting internships. It makes a difference.”
The SciTechsperience Internship Program is designed to build Minnesota’s workforce in STEM fields by connecting students to small companies and by keeping this highly sought after talent in Minnesota.

In August 2017, MHTA conducted a survey with program participants from the previous five program years (2012–2016) to gauge their employment status. Of the 612 students contacted, 180 students responded to the survey (a 29 percent response rate). Of those 180 respondents, MHTA found the following:

- 74 percent of respondents are working in their STEM field of study (133 out of 180);
- 68 percent of those working in STEM stayed in Minnesota (90 out of 133), including 28 people who either went to school out of state or were from out of state and attended college in Minnesota;
- 26 percent of those working in their field were still working at the company where they did their SciTechsperience internship (35 out of 133);
- Of the 47 respondents not working in STEM, 15 were still in school (undergraduate, graduate, PhD, or medical school), 1 was a teaching assistant, 11 were working in a different field, and 20 others were not looking for work at this time. Only 6 respondents who were looking for work in STEM fields were unsuccessful;
- 86 percent of respondents said their SciTechsperience internship was instrumental in jump-starting their career in a STEM field (50 percent strongly agree, 36 percent agree);
- 89 percent (161) of respondents ranked getting hands-on experience with industry tools and processes as the number one benefit of their SciTechsperience internship in helping them prepare for the professional workforce. See Figure 15 for a list of additional benefits.

MHTA also tracked the short-term employment impact of the 293 students hired in 2016-2017. At the time companies submitted their reimbursement paperwork, nearly half – 48 percent (140 of 293) of interns – were still working with their SciTechsperience company either through an extension of the internship (88), as a part-time employee (36), or as a full-time employee (16). Of the remaining 153 students whose internships had ended, 74 percent (113) were midway through a bachelor’s or associate’s degree and presumably headed back to school. Longer term impacts of the 2016-2017 internships will be measured via survey in 2018.

SciTechsperience is fulfilling its mission of helping students bridge the gap from classroom to career and helping small businesses improve productivity and source future workers. Through these important outcomes, Minnesota is gaining ground in building its STEM workforce.
In a 2015 article posted on the Minnesota Compass website, Minnesota State Demographer Susan Brower wrote:

“We hear a lot about “attracting and retaining talent” as a way to sustain the economic growth Minnesota has experienced since the end of the Great Recession. The private sector has been oriented toward the goal of talent retention for some time; the public and nonprofit sectors also know well that developing, keeping, and attracting skilled people are central to the future well-being of Minnesota. Attracting smart, hard-working innovators to the state — and keeping the ones we already have — will become more important than ever in the decades to come.”

The need for talent attraction and retention is still true today, and the need for the SciTechsperience Internship Program and the benefits it provides to students, employers and the State of Minnesota is as strong as ever.

In 2018-2019, MHTA will put a $2.7 million appropriation to work to support at least 650 internships with matching wage stipends. Since nearly 1500 students and 242 companies applied for 293 stipends in 2017, this increase in funding helps move the program toward filling the great demand for STEM talent in Minnesota.

In addition to the overall increased placement goals for the 2018 program year, MHTA will continue its efforts to increase both the number of applicants and hires among women and students of color. MHTA is reaching out to partners in higher education, including organizations such as the North Star STEM Alliance, National Society of Black Engineers, Society of Hispanic Professional Engineers, the Society of Women Engineers and other student groups to support this effort.

MHTA will also work to maintain and increase program participation with students and companies in Greater Minnesota through campus visits and events, as well as partnering with DEED, industry associations, and networking through current companies involved with the program. We’ve added live and recorded webinars that feature hiring and job search tips, a robust blog, and social media posts to our outreach efforts to gain additional visibility of the program. In addition, SciTechsperience partners with MN SBIR to connect federally funded Minnesota companies with high quality STEM students to support federal research efforts with strong commercialization potential.

In addition to MHTA’s outreach efforts, SciTechsperience partners with Augsburg University and the North Star STEM Alliance to cohost the annual “Jump Start Your STEM Job Search” workshop, a half day event in February that provides an employer panel, a multiple workshops on improving job search skills, and assistance with LinkedIn profiles and resumes. The Jump Start 2018 will be the fourth consecutive year of this event. MHTA is also partnering with The Software Guild to provide additional content to students via webinars on subjects including communicating with employers, preparing for interviews, and how to use the STAR (Situation, Task, Action, Result) method as a framework to answer questions during an interview.

MHTA looks forward to these opportunities and remains committed to building Minnesota’s STEM workforce pipeline by supporting STEM students and small science and technology companies.
“The program helped our company justify hiring an intern and provided an easy way to advertise the position and search for candidates.” – Kelly Omarro (left), Integrated Technology Engineering, Rochester with intern Nick Steinmetz

“I want to thank SciTechsperience and FastBridge Learning for providing me an opportunity as a Software Quality Analyst Intern. I have gained valuable insight into the technology industry over the past 3 months. I was able to work on various projects, I had the chance to learn new tools like Zira & SnagIt and experienced the real working environment. This experience will help me to achieve more in the upcoming future.” – Dayitwa Shrestha, FastBridge Learning, Minneapolis

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### APPENDIX

<table>
<thead>
<tr>
<th>CITY</th>
<th>HIRING COMPANY</th>
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<tr>
<td>Alexandria</td>
<td>Douglas Scientific</td>
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<td>Angora</td>
<td>Art Unlimited</td>
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<td>Anoka</td>
<td>SarTec Corporation</td>
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<td>Bemidji</td>
<td>Aircorps Aviation</td>
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<td>LaValley Industries</td>
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<td>Roger’s Two Way Radio</td>
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<td>Blaine</td>
<td>Premier Industries</td>
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<td>Bloomington</td>
<td>Airborne Athletics</td>
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<td>FMS Corporation</td>
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<td>RevTrak, Inc</td>
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<td>Blue Earth</td>
<td>Solution Builders, Inc.</td>
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<td>Buffalo</td>
<td>Midwest IT Systems</td>
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<td>Burnsville</td>
<td>Taralan Corporation</td>
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<td>StoneBrooke Engineering</td>
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<td>Analog Technologies Corp</td>
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<td>Anser Innovations</td>
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<td>Celadon Systems</td>
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<td>Imricor Medical Systems, Inc.</td>
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<td>Chanhassen</td>
<td>Energy Insight, Inc.</td>
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<td>Chaska</td>
<td>Aeration Industries International</td>
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<td>Detroit Lakes</td>
<td>RMB Environmental Laboratories</td>
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<td>Duluth</td>
<td>American Precision Avionics</td>
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<td>Krech Ojard &amp; Associates, Inc.</td>
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<td>Saturn Systems</td>
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<td>Two Harbors</td>
<td>The Actives Factory</td>
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<td>Eagan</td>
<td>API Outsourcing, Inc.</td>
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<td>Eden Prairie</td>
<td>Hansen Thorp Pellinen Olson, Inc.</td>
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<td>NVE Corporation</td>
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<td>Third Wave Systems</td>
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<td>Edina</td>
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<td></td>
<td>Oakland Instrument Corp</td>
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<td></td>
<td>Precision Gasket Company (PGC)</td>
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<td>Faribault</td>
<td>TruNorth Solar</td>
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<td></td>
<td>Environmental Tillage Systems, Inc.</td>
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<th>CITY</th>
<th>HIRING COMPANY</th>
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<tr>
<td>Farmington</td>
<td>Aerospace Fabrication &amp; Materials LLC</td>
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<td>Fergus Falls</td>
<td>Vector Windows</td>
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<td>Glencoe</td>
<td>Delta Fabricating Company</td>
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<td>Golden Valley</td>
<td>Chromatic 3D Materials LLC</td>
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<td>Ham Lake</td>
<td>Safety Speed Mfg</td>
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<td>Hamel</td>
<td>C-Axis</td>
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<td>Hawley</td>
<td>Alderon Industries Inc</td>
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<td>Hibbing</td>
<td>Jasper Engineering &amp; Equipment Co</td>
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<td>Hopkins</td>
<td>Jed Mahonis Group</td>
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<td>Inver Grove</td>
<td>Heights</td>
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<td>Heights</td>
<td>Northern Technologies, LLC</td>
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<td>Isanti</td>
<td>Ever Cat Fuels</td>
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<td>Lake City</td>
<td>Acrotech Inc.</td>
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<td>Lakeville</td>
<td>Edge Consulting</td>
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<td>Lewiston</td>
<td>Plasticert</td>
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<td>Litchfield</td>
<td>PNE Inc dba IRD Glass</td>
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<td>Little Falls</td>
<td>Anez Consulting Little Falls</td>
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<td>Atomic Learning</td>
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<td>Mahtomedi</td>
<td>RtVision</td>
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<td>Maple Grove</td>
<td>Faith Engineering, LLC</td>
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<td>Aspen Research Corporation</td>
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<td>Chanl Health</td>
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<td>Pursuit Vascular, Inc.</td>
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<td>Uhl Company</td>
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<td>Minneapolis</td>
<td>7-SIGMA, Inc.</td>
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<td></td>
<td>Ascent Solutions LLC</td>
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<td>Atlas Manufacturing</td>
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<td>Bust Out Solutions, Inc.</td>
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<td>Colectica/Algenta Technologies</td>
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<td>Control Assemblies Company</td>
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<td>Delavan Ag Pumps, Inc.</td>
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<td></td>
<td>Diagnostic Biosensors</td>
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<td>DOSE Health</td>
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<td>e:solutions One, Inc</td>
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<td>Goat Consulting</td>
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<td>Homi</td>
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*List of hiring companies continued on p. 19*
"At my summer internship through SciTechsperience, I gained professional experience in computer science and learned how to use tools like GitHub to manage workflow and delegate tasks. The work experience was indispensable and confirmed that computer science was the field for me. My time at work was genuinely fun and enjoyable and my supervisors were helpful and easy going. I could not have asked for a better summer experience." – Kevin Christianson (left), Colectica, Minneapolis, with supervisor Jeremy Iverson

List of hiring companies continued on p.20
APPENDIX

COLLEGE/UNIVERSITY SYSTEM SUMMARY
Finding opportunities back home may increase Minnesota’s chances of retaining important home-grown STEM talent. SciTechsperience is gaining ground with students who have left the state for college but hope to return to Minnesota to start their careers: In 2017, 166 applicants and 54 hires were filled by Minnesota residents who attend school out of state (see Figure 16), compared to 26 applicants, 39 hires in 2016.

Students from the University of Minnesota (U of M) system made up the largest percentages of both the applicant pool (40 percent) and the hires (43 percent), although as a percentage of overall hires, this was down 2 percent from 2016 (see Figure 16). Students attending Minnesota State colleges and universities made up 24 percent of hires, which represents a slight increase over 2016 (22 percent). Students attending Minnesota’s private colleges and universities remained essentially level from 2016 at 14 percent of total hires. For-profit colleges made up a very small percent of both applicants and hires. As mentioned above, Minnesota residents who attend college out of state made up 18 percent of hires. Because retention is an important goal of the SciTechsperience program given the state’s status as a net exporter of talent, bringing students back to Minnesota and introducing them to the wide variety of opportunities in small Minnesota companies is a positive result.

Figure 16. Student Summary Based on Location of Permanent Address

<table>
<thead>
<tr>
<th>Students by College/Univ. System</th>
<th># of Applicants</th>
<th>% of Total Applicants</th>
<th># of Hires</th>
<th>% of Total Hires</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Minnesota</td>
<td>596</td>
<td>40%</td>
<td>126</td>
<td>43%</td>
</tr>
<tr>
<td>MN State Colleges and Universities</td>
<td>402</td>
<td>27%</td>
<td>72</td>
<td>24%</td>
</tr>
<tr>
<td>Private Colleges</td>
<td>300</td>
<td>20%</td>
<td>40</td>
<td>14%</td>
</tr>
<tr>
<td>Out of State Colleges</td>
<td>166</td>
<td>11%</td>
<td>54</td>
<td>18%</td>
</tr>
<tr>
<td>For-profit Colleges</td>
<td>14</td>
<td>1%</td>
<td>1</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>&lt;1%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>1479</td>
<td>100%</td>
<td>293</td>
<td>100%</td>
</tr>
</tbody>
</table>
APPENDIX

PARTICIPATING COLLEGES & UNIVERSITIES (ALL APPLICANTS)
SciTechsperience attracted applicants from 105 different educational institutions across the U.S.:

Anoka Technical College
Anoka-Ramsey Community College
Arizona State University, AZ
Augsburg University
Beloit College, WI
Bemidji State University
Bethany Lutheran College
Bethel University
Boston University, MA
Carleton College
Carnegie Mellon University, PA
Central College, IA
Central Lakes College
Century College
Chippewa Valley Technical College, WI
College of St. Benedict
College of St. Scholastica
Concordia College-Moorhead
Concordia University-St. Paul
Crown College
Dakota County Technical College
Dordt College, IA
Drake University, IA
Dunwoody College of Technology
Flatiron School, NY
Gettysburg College, PA
Grinnell College, IA
Gustavus Adolphus College
Hamline University
Hennepin Technical College
Hibbing Community College
Hillsdale College, MI
Hofstra University, NY
Inver Hills Community College
Iowa State University, IA
Knox College, IL
Lake Area Technical Institute, SD
Lake Superior College
Lewis & Clark College, OR
Louisiana State University, LA
Luther College, IA
Macalester College
Marquette University, WI
Mesabi Range Community & Technical College
Metropolitan State University
Michigan State University, MI
Michigan Technological University, MI
Minnesota Community & Technical College
Minnesota School of Business-Moorhead
Minnesota State Community & Technical College
Minnesota State University-Mankato
Minnesota State University-Moorhead
Minnesota West Community & Technical College
Montana State University, MT
Mount Holyoke College, MA
Normandale Community College
North Central University
North Dakota State University, ND
North Hennepin Community College
Northeastern University, MA
Pine Technical College
Prime Digital Academy
Purdue University, IN

List of participating institutions continued on p.22

“Thanks to SciTechsperience for the internship opportunity. Over the course of my internship, I gained both valuable knowledge and real-world technical skills. This internship also helped me advance my professional skills and I am now looking forward to continue my career in Civil Engineering.” – Ridwan Abdi (left), Sambatek, Inc., Minnetonka, with fellow SciTechsperience intern, Ashley Astor

“My internship with CoreBiome allowed me to further explore a career in bioinformatics, giving me hands-on experience with real data. It was a fully immersive internship, where I got to see every part of the business from the lab work to creating the statistical reports.” – Suzie Hoops (left), CoreBiome, St. Paul, with fellow SciTechsperience intern Eve Grabau
“It is really nice having a variety of interns available. This diversity helps our company grow and get better at the same time we are hopefully helping these young individuals learn and grow.”
– Matt Haley (center), Energy Insight Inc., Cloquet, with SciTechsperience interns Ryan Jutting (left) and Aidan Faucet (right)
"Having my internship taught me multiple skills in the agricultural industry that cannot be taught in a classroom. I was able to gain insight on the newest precious ag and agronomic technologies." — August Maciej, Anez Consulting, Little Falls

"Working at ETS helped me gain valuable skills that cannot be learned in the classroom. This experience has led me down a new path in my engineering career." — Thaddeus Stasney, Environmental Tillage Systems, Faribault

"This internship gave me the chance to increase my knowledge in the precision agriculture field as well as improving my professionalism. Through this internship I know that I am on the right career path." — Gavin Held, Environmental Tillage Systems, Faribault

"This internship allowed me to gain real world, professional experience. I was able to have a hands on experience and apply engineering concepts learned in the classroom. I am very grateful for the SciTechsperience program." — Riley Peterson, Safety Speed Mfg, Ham Lake

"SciTechsperience created the opportunity for me to gain the professional experience I needed before making a solid decision about my future plans." — Natasha Clark, Energy Insight Inc, Chanhassen

"I got better feedback and interest in two days of using SciTechsperience than I did in 7 months of hunting online and going to job fairs." — Alan Wesley, Faith Engineering, Mahtomedi

"SciTechsperience was very easy to use and I quickly found something that worked perfectly for me. I did not have to syphon through jobs that were not applicable to my major or too far away." — Rebecca Groninga, Delta Fabricating Company, Glencoe

"I appreciate the fact that people from the program are willing to come visit the site to see the internship in action." — Shefali Jain (right), Mindset Consulting, Minneapolis with Alex Jones (left)

"This program gave me an additional tool for searching for an internship, and gave companies the ability to look for me. Without SciTechsperience I would not have found such a great internship." — Nathan Angerhofer (center right), Monteris Medical, Plymouth

"I got better feedback and interest in two days of using SciTechsperience than I did in 7 months of hunting online and going to job fairs." — Alan Wesley, Faith Engineering, Mahtomedi

"SciTechsperience created the opportunity for me to gain the professional experience I needed before making a solid decision about my future plans." — Natasha Clark, Energy Insight Inc, Chanhassen

"This internship allowed me to gain real world, professional experience. I was able to have a hands on experience and apply engineering concepts learned in the classroom. I am very grateful for the SciTechsperience program." — Riley Peterson, Safety Speed Mfg, Ham Lake